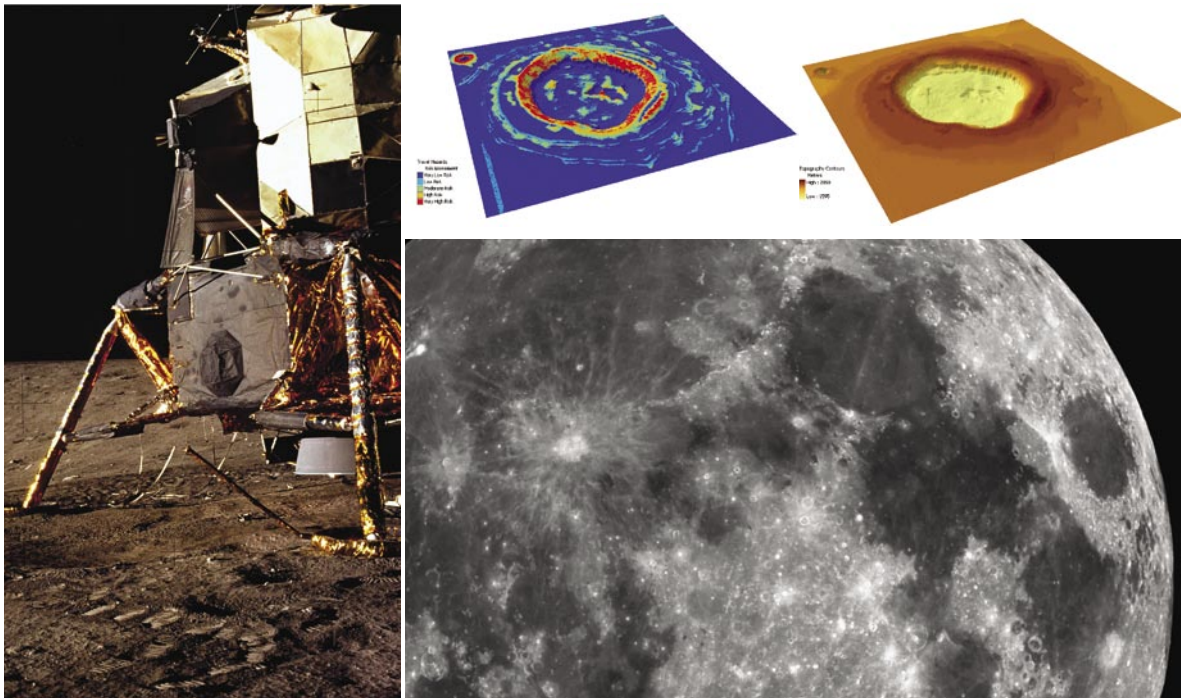


Merging Two Powerful Software Tools to Create a One-of-a-Kind Exploration Capability



Under this partnership, the Goddard Space Flight Center is integrating its ILIADS software, a geospatial information system (GIS) developed for lunar applications, with Questus™, a management and planning software tool developed by United Space Alliance (USA) for Space Shuttle operations. By integrating the two, NASA will get a new decision-making tool that it can use to plan and carry out future robotic and crewed missions to the Moon.

Benefits of Technology Transfer

- The resulting ILIADS-Questus product will allow mission planners to apply scientific data gathered from remote-sensing satellites and other sources to select potential landing and habitat sites.
- Ultimately, the tool will support human exploratory sorties on the lunar surface later in the next decade.
- USA can commercialize the new product, particularly in its work developing NASA's next-generation transportation system, the Crew Exploration Vehicle (CEV).
- As private companies increase their participation in lunar exploration, they too will need access to scientific data and decision-making tools. The integrated ILIADS-Questus software will meet their needs, providing an additional revenue stream for USA.

On the Record

“Combining Goddard’s scientific data and science operations capabilities with our real-time flight operations expertise is a partnership that will help NASA achieve its Vision for Space Exploration. All missions leading up to and including human sorties on the Moon will depend heavily on information about the lunar environment, information that this partnership will provide.” – *Gerald E. Miller Manager, Strategic Technology Initiatives and Independent Research and Development, USA*

“Our partnership with USA has made all of the difference in the development of the new product. Without USA’s perspective, we would tend to build a tool that is conceived by and useful to scientists. With the company’s guidance, we are building a tool that will be useful in mission operations.” – *Julia Loftis, Co-Investigator, NASA Goddard Space Flight Center*

About United Space Alliance

United Space Alliance is a world leader in space operations. Headquartered in Houston and employing 10,000 people in Texas, Florida, and Alabama, USA is applying its broad range of capabilities to NASA’s Space Shuttle, International Space Station, and Constellation programs as well as to customers in the commercial and international space sectors.

Technology Origins

Using internal R&D funding, Goddard technologists modified commercially available GIS software to design an integrated tool suite useful for lunar exploration. ILIADS—short for Integrated Lunar Information Architecture for Decision Support—gives users access to three-dimensional lunar crater scenes, topographic contour maps, surface distance and elevation measurements, *in situ* resource and hazard maps, and other useful datasets.

USA also used its own internal resources to develop Questus, which combines three software programs that the company developed for space operations. Questus will help mission-operations personnel more efficiently find and retrieve information, schedule daily astronaut activities, and carry out robotic operations.

Finding a New Use

NASA planners and decision makers must be able to process, analyze, display, and manipulate all types of environmental information about the Moon. Such an all-in-one decision-making and planning tool currently does not exist. Goddard is modifying ILIADS so that its server, server interface, and datasets are available to Questus in a standard format. Meanwhile, USA is modifying Questus to support ILIADS’s lunar environmental data. With these modifications, including a continuous zoom-and-pan function, users will be able to visually specify geographic areas on the Moon and quickly retrieve more specific data about that area.

The Transfer Process

From consultations with Goddard’s Innovative Partnerships Program Office, Goddard and USA realized that their products could become more powerful if were combined. In 2006, NASA selected the collaboration for its Partnership Seed Fund and provided additional resources for the partners to integrate the two. The Partnership Seed Fund, which NASA introduced in 2006, is designed to encourage joint-development partnerships between its organizations, private industry, and others.

Looking Ahead

Goddard and USA expect to complete the integration in time for the Lunar Reconnaissance Orbiter (LRO), a Goddard-led mission that will spend a year mapping the Moon after its launch in 2008. With the new capability, exploration mission planners will get faster, more efficient access to LRO data, which they can then use to plan and carry out subsequent missions to the Moon, including crewed lunar operations.

For More Information

If you would like additional information about Goddard’s technology transfer opportunities, please contact:

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